International Development Research Centre

Final Report

The Urban Water Management Exploration

Submitted to:

RRAF

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Executive Summary

The Urban Water Management Exploration studied the feasibility of implementing an IDRC-supported Urban Water Management (UWM) Program. Its key findings are as follows:

1. A new international urban water management agenda has emerged

Conventional urban water management has focused on large-scale capital investments. Not only has this supply-side approach failed in meeting the demand for water and sanitation services, but it has also proved inadequate in solving environmental, social and equity problems; in some cases, it has contributed to these problems. While capital investments remain an important requirement, the new agenda emphasizes:

- Conservation of water resources through demand management, and efficiencies in water supply delivery;
- Integrated institutional arrangements in order to allow an inter-sectoral management of the range of water resources and related services;
- Participatory, partnership-based approach to decision making and service delivery; and,
- Treatment of water as an economic good, requiring appropriate pricing and cost recovery mechanisms.

A central focus of the new agenda is on addressing the economic inefficiencies of conventional urban water management. Consequently, there is a risk that social equity issues will receive inadequate attention.

2. IDRC support for an Urban Water Management Research Program based partly on the new agenda is feasible.

The new agenda implies more work on the "softer-side" of development- including managerial and institutional strengthening, integrated policy development, multi-stakeholder partnerships, community-based management and gender equity-and less on technical solutions. In addition to its extensive experience in these "softer" areas, IDRC has also supported over 75 urban water management projects.

An IDRC UWM Program would work towards implementing the basic principles of the new agenda, but should also address the agenda's equity implications.

3. IDRC is well-positioned to assume a leadership role in the area of urban water management.

While international development agencies are openly supportive of the new agenda, they have fallen short of designing relevant programs or projects. This includes the World Bank as well as major bilateral agencies such as GTZ. At the same time, the Exploration has provided IDRC with strong momentum towards a progressive urban water program. This progress has already been

acknowledged by agencies such as the Asian Development Bank, Swedish International Development Cooperation Agency and CIDA.

A leadership role implies a greater profile and impact for IDRC, and an excellent means of leveraging external sources of funds. Revenue diversification could flow from IDRC research consulting services designed to strengthen urban water programming of other agencies, as well as from co-funding.

4. An IDRC Urban Water Management (UWM) Program should focus on the improved management and equitable delivery of water and wastewater services to the lowest income urban and peri-urban households.

This goal is to be achieved by means of two objectives:

- increasing water supplies and financial resources available to municipal utilities through demand management initiatives and alternative institutional arrangements.
- exploring the range of centralized and decentralized managerial, institutional, policy and technical options for providing equitable water and sanitation services to currently unserved communities.

5. A UWM Program should focus on five types of research studies.

- Baseline data collection & management
- Demand management and conservation strategies
- Water pricing and tariffs
- Water markets
- Institutional and Management options

6. A UWM program strategy should be designed to overcome the serious challenges associated with urban water programming.

In order to have a meaningful impact on development, the program strategy should be based on a long term relationship with a few carefully selected municipalities, built around a continuous, incremental series of projects. The Program will focus on building partnerships between researchers and utilities, relevant government agencies, NGOs, the formal and informal private sector and community organizations.

7. A more co-ordinated approach to IDRC's water management activities is recommended over the long term.

The long term goal of the UWM Program is to work towards achieving a vision of integrated water resources management programming at IDRC. In this sense, urban water management research is an important link within the wider sustainable water resources management agenda. The Exploration is proposing closer collaboration between existing IDRC water management initiatives across themes and across regions.

i. Acknowledgements

While the Exploration's day-to-day activities were carried out by its two core members, invaluable contributions were provided by numerous IDRC staff serving as resource persons. In Ottawa, these included David Brooks, Denise Deby, Rohinton Medhora, Luc Mougeot, Andrés Sanchez, Zbigniew Mikolajuk, and Madeleine Audet. In the regional offices, these included Hartmut Krugmann (Nairobi), Wardie Leppan (Johannesburg), Stephen Tyler (Singapore), Charles Davis (Montevideo), Aung Gyi (New Delhi), and Eglal Rached (Cairo).

IDRC staff also provided substantial support in organizing the Exploration's workshop, held in India. These included Manon Thérien, Angie Anton, Louise Champagne, Roch Paquette, and Andrée Lalonde in Ottawa, as well as Prabha Sethuraman in New Delhi, and Imelda Wasike in Nairobi.

ii. Purpose of Report

An April 10, 1996 memo from the VP Programs states that the aim of a feasibility exploration is "to yield clear and documented answers to whether or not the Centre should support research on an issue and advise on the most appropriate mechanisms for implementation."

Consistent with this intention, the final report of the Urban Water Management Exploration (the Exploration) presents the findings and recommendations of a study of the feasibility of implementing an IDRC urban water management research program. The study's terms of reference, as laid out in the Exploration proposal, are as follows:

1. *To define a coherent research program focusing on sustainable management of the water sector in urbanizing regions;*

2. *To identify and develop a multi-disciplinary network of urban water management stakeholders, building on IDRC's existing networks;*

3. *To undertake a detailed and comprehensive analysis of support for urban water management research within IDRC;*

4. *To identify potential sources of external support for a future program;*

5. *To formulate and propose a detailed strategic plan of action for the implementation of an urban water management research program at IDRC.*

iii. Exploration methodology

The Exploration pursued several activities in support of its objectives. For the most part, these were carried out concurrently.

Analysis of IDRC interest and capacity in urban water management research
This activity defined IDRC's level of interest and capacity in the area of urban water management. The primary tasks carried out included an assessment of active and pipeline urban water management projects and programming activities; and, consultation with IDRC staff involved in urban water management, both in Ottawa and the regional offices.

Development of an urban water management network
The purpose of this activity was to compile an electronic inventory of individuals and organizations representing a variety of disciplines, sectors, and levels of decision making involved in urban water management. This network was used to identify workshop participants, and will be used in the process of disseminating information on the workshop and the urban water management program.

Exploring opportunities for collaboration with external support agencies (ESAs)
The purpose of this activity included determining the program priorities of agencies involved in urban water management development activities[1]; avoiding duplication or contradiction in program development; identifying specific sources of funding support for a potential urban water management program; and, exploring possible intellectual partnerships at the level of program or project development. These objectives were met most effectively through a series of face-to-face meetings with a range of donor and non-donor agencies. Analysis of primary documentation from ESAs was also used in assessing interest in urban water management programming.

Priority setting workshop
A workshop was held in Jaipur, India from January 7-9, 1997, hosted by IDRC in association with the Institute of Development Studies, located in Jaipur. The workshop provided a forum for a cross-section of the urban water management network to identify and prioritize the research issues most critical to the sustainable development of water resources in rapidly urbanizing regions. The majority of the 30 participants were from South Asia, and Southern and Eastern Africa. However, there was also representation from Latin America and Eastern Europe. Workshop proceedings are to be published and disseminated to all workshop participants and to interested members of the Exploration's network. The workshop also received substantial publicity in India through print media coverage in Jaipur and New Delhi in both English and Hindi.

[1] The focus was on donor agencies, though meetings also took place with executing agencies and active networks.

Synthesis of findings
The final activity involved a synthesis of the feasibility study findings. The findings were used to develop recommendations for a future urban water management initiative, as well as a proposal to carry out an interim work program leading to approval of a formal Program Initiative.

iv. Report structure

The report is divided into three sections. Section 1 introduces the development problem and reviews the evolution of the water and urban agendas between 1976 and 1996. Section 2 presents the findings of the feasibility study. The report's final section recommends ways in which an urban water management research program can be implemented at IDRC. These recommendations are framed in the context of a vision for an IDRC-wide integrated water resources management (IWRM) strategy.

Section 1.0 - The Urban Water Management Research Agenda

1.1 The development problem

The development problem being addressed by the Exploration is the unsustainable management of the water sector in rapidly urbanizing regions of developing countries.[2] Within this broad framework, the Exploration's focus is on the efficient and equitable management and delivery of municipal water services, including both drinking water and wastewater.

At least three significant shortcomings are associated with the conventional approach to urban water management:

- Meeting projected urban water consumption and wastewater production requirements through increased investments, rather than managing the demand for water or improving the efficiency of supply.
- An inappropriate enabling environment, including fragmented institutional responsibility for urban water management and limited involvement of non-public sector players in decision making and service delivery.
- Inappropriate incentives for the efficient use of water, including the reliance on inequitable subsidies and archaic pricing policies, which reflect neither the cost nor the value of water and related services.

These shortcomings result in a range of social, environmental and economic externalities, each serving to compromise the quality of life of all urban residents. Households serviced by water utilities routinely endure low water pressure, water rationing, and poor water quality. Many higher income households are able to respond to these limitations by supplementing municipal water services with costly systems composed of generator-operated pumps, water storage tanks, water filtration & purification systems, and bottled water.[3] Access to adequate housing and health care also serve to protect higher income households from many of these damaging effects. Those without access to sufficient financial resources must contend with serious health threats.

More significant is the impact felt by those households excluded entirely from municipal water and sanitation services. Informal communities located in urban and peri-urban areas are commonly unserved either as a result of the unplanned or "spontaneous" nature of these settlements, or due to

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[2] The urban water sector comprises the full spectrum of water resources- ground and surface waters- and water-related services -water supply, wastewater, and drainage- occurring in or affected by an urban area.

[3] Where water rates charged by public utilities are based on outdated property assessments, rather than consumption, (as is often the case) water bills tend to be similar across income levels, despite a positive correlation between income and water consumption.

legal and/or political restrictions imposed on public utilities. Many unserved families rely on informal supplies of water sold by private vendors. On average, these families pay ten to twenty times more than the rates paid by residents receiving piped water service.[4] These families not only face severe financial inequities, but are also exposed to significantly higher water-related health risks. Unserved families commonly rely on contaminated surface and ground water for sanitation, washing, and even drinking. Families unable to afford basic housing build their own housing on parcels of land situated in close proximity to, or directly above, heavily polluted rivers.

Despite their exclusion from it, the survival response of unserved households further constrains the municipal system. Unauthorized withdrawals of groundwater supplies and illegal hook-ups to public water pipes reduce the formal water supply and exacerbate unaccounted-for-water losses. Similarly, the use of surface water for sanitary waste disposal contributes to water pollution.

Unsustainable water management also affects urban communities at a macro-level. The health threats associated with inadequate water at the household level, are exacerbated on a larger scale by heavily polluted surface and ground water caused by unregulated dumping of household and industrial effluent. Inadequate surface water supplies lead to increased, and often illegal, consumption of vulnerable supplies of groundwater. Significant land subsidence brought on by intensive mining of urban aquifers, in turn, causes property damage and has been linked to increasing incidences of flooding. Inappropriate management of urban drainage also contributes to flooding and overwhelms treatment plants. Ultimately, the combination of these factors constrains industrial and commercial investment in urban areas, leading to higher unemployment, and restricting wealth generation.

1.2 The international response

The international response to unsustainable urban water management is reflected in two intersecting agendas which have emerged gradually over the past twenty years, and most rapidly since 1990 (Table 1) :

1. the management of scarce water resources-the water agenda
2. the management of rapid and uncontrolled urbanization-the urban agenda

1.2.1 The water agenda

The fundamental importance of water to human life was highlighted during *Habitat I*, the 1976 *United Nations Conference on Human Settlements*. Participating governments made a commitment to "adopt programmes with realistic standards for quality and quantity to provide water for urban and rural areas by 1990." One year later, the *UN Water Conference* at Mar del Plata reaffirmed the commitment made at *Habitat I*. Following on the recommendations from these conferences, the years 1981 to 1990 were declared the *International Drinking Water Supply and Sanitation Decade*.

[4] Up to 80 to 100 times in some municipalities.

TABLE 1 MILESTONES IN THE EVOLUTION OF THE INTERNATIONAL URBAN AND WATER AGENDAS 1976-1996

	MEETINGS	POLICIES/ EVENTS	PROGRAMS	COORDINATION
1976	Habitat I, Vancouver			
1977	UN Water Conference, Mar del Plata			
1978			UNDP/World Bank Water & Sanitation Program	
1981		International Decade for Drinking Water Supply & Sanitation		
1990	Global Consultation on Safe Water & Sanitation, New Delhi		UNDP/UNCHS/ World Bank Urban Mgmt Program	Water Supply and Sanitation Collaborative Council (WSSCC)
1991	Strategy for Water Sector Capacity Building, Netherlands	World Bank Urban Policy	UNCHS/UNEP Sustainable Cities Program	
1992	Intl Conference on Water and the Environment, Dublin	UNDP/UNCHS Urban Environment Policy		
1993	UNCED, Ch. 18, Rio		UNDP Capacity Building Programme for Sustainable Water Sector Development	
1994	Ministerial Conference on Drinking Water & Environmental Sanitation: Noordwijk, the Netherlands	World Bank Water Resources Policy		
1995				
1996	Intl Conference on Managing Water Resources for large cities and towns, Beijing Habitat II, Istanbul	UNDP Strategy: Capacity Building for Sustainable Mgmt of Water Resources		Global Water Partnership (GWP)

The institutional response to the "Water Decade" was reflected in the Water and Sanitation Program established jointly by the World Bank and UNDP in 1978. The program's approach focused on harnessing technical solutions in order to increase service coverage. In fact, the rate of provision of safe water and sanitation facilities during the Water Decade was more than double that of the 1970s. However, rapid population growth during this period left over 1 billion people without safe water and

1.76 billion without adequate sanitation by 1990.[5] Within urban areas, about one in five residents in developing countries was still without adequate water supplies by 1990, and about one-third still lacked adequate sanitation services. The number of people without access to safe water and proper sanitation remained higher in 1995 than in 1990.

Recognizing the limitations of the approach taken during the Water Decade, a "new agenda" has emerged based on principles adopted at the 1992 *Dublin Conference on Water and the Environment* (Table 2) and affirmed in Agenda 21. The new agenda calls for a demand-based, multi-sectoral approach to water management, broader participation in decision making, reliance on appropriate institutional arrangements, and the treatment of water as an economic good. While the "old agenda" is still seen as posing a significant financial, technical, and institutional challenge, these principles emphasize the need for a broader, and more integrated approach to managing urban water resources and delivering water and sanitation services.

TABLE 2 THE DUBLIN PRINCIPLES

1. Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment, requiring an integrated management approach.
2. Water development and management should be based on a participatory approach, occurring at the lowest appropriate level of decision making.
3. Women play a central part in the provision, management and safeguarding of water.
4. Water has an economic value in all its competing uses and should be recognized as an economic good.

The institutional response to the new agenda is now taking shape. Policy leadership has been assumed by the World Bank and UNDP. The World Bank's position is reflected in its 1993 *Policy Paper on Water Resources Management*. The UNDP is currently finalizing its *Water Resources Management Strategy*, which focuses on capacity building.[6] Co-ordination of this institutional response will be led by the Global Water Partnership (GWP), formed in 1996. The GWP's goal is to promote the meaningful operationalization of the Dublin Principles and relevant chapters of Agenda 21.[7]

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[5] World Health Organization. "Community water supply and sanitation: needs, challenges and health objectives: Report by the Director General," Forty-Eighth World Health Assembly. April 28, 1995.

[6] The draft strategy, entitled *Capacity building for sustainable management of water resources and the aquatic environment,* focuses on "neglected but essential" areas of programming, including demand management, promotion and dissemination of small scale technologies, financing mechanisms for community-managed water infrastructure, and water-related conflict resolution.

[7] Programming activities for urban water management are included in Chapter 18, "Protection of the Quality and Supply of Freshwater Resources."

1.2.2 The urban agenda

The second development agenda relevant to the Exploration addresses the impact of rapid population and industrial growth occurring in urban areas throughout developing countries. In an already largely urban world the growth of cities and towns will be the single largest influence on

TABLE 3 URBANIZATION IN SELECTED REGIONS[8]

Region	Levels of urbanization			Growth rates (1990-95)	
	1975	1995	2025	urban	rural
Africa	25%	34%	54%	4.4	2.0
Asia	25%	35%	55%	3.3	0.8
S. America	64%	78%	88%	2.5	(0.8)
World	38%	45%	61%	2.5	0.8
N&C America	57%	68%	79%	1.8	0.4
Oceania	72%	70%	75%	1.5	1.7
Europe	67%	74%	83%	0.6	(1.0)

TABLE 4 ANNUAL URBAN GROWTH RATES IN SELECTED COUNTRIES[9]

Country	1975-80	1990-95	2005-10
Mozambique	11.22	7.77	4.08
Botswana	8.22	7.14	4.61
Kenya	8.20	6.55	5.05
Tanzania	10.74	6.51	5.36
Bangladesh	6.76	5.87	4.59
Cambodia	-1.76	4.50	5.21

development in the first half of the 21st century. This influence is measurable not only in terms of population distribution, but in economic and political terms as well. The World Bank estimates that as much as 80 percent of future economic growth in the developing world will occur in urban areas. At the same time, half of the world's absolute poor will be living in urban areas by 2000.

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[8] World Resources Institute et al.. World Resources-A Guide to the Global Environment 1996-97. New York: Oxford University Press, 1996.

[9] Tannerfeldt, Goran. Towards an Urban World. Urbanization & Development Assistance. Stockholm: Sida, 1995.

Urban population growth is generally most pronounced in two contexts: the poorest regions and those regions undergoing rapid economic growth. For example, annual urban growth rates are at nearly five percent in the least developed countries, and more than seven percent in Mozambique, Nepal and Afghanistan. Regionally, Sub-Saharan African and Southeast Asian countries are undergoing the most dramatic transformation from predominantly rural to urban societies. [10]

Within these countries, the focus of international attention, and development assistance, has been trained on the problems of mega-cities. However, most urban dwellers live in smaller cities and towns, with more than half living in cities of less than 500,000 people, and 40-45 per cent living in settlements of less than 100,000 people.[11] While these urban areas are experiencing rapid population growth, investment in basic environmental infrastructure and services has been neglected in comparison to larger cities.

The official response to urbanization has evolved over the past forty years. Prior to the 1970s, national government and international development agency initiatives sought to control and reverse the trend toward urbanization. This approach gave way to the provision of low cost shelter and services during the 1970s and 1980s in the form of sites and services and squatter upgrading projects. However, it was not until the 1990s that individual lending and donor agencies developed formal urban development strategies and policies, following the lead taken by the World Bank and the United Nations Development Programme (UNDP).[12]

The current approach being taken by national governments and donor agencies emphasizes strengthening the capacity of local governments and local authorities to manage the impact of urban development in an integrated, equitable, democratic and sustainable manner. This approach formed the basis of *Habitat II*'s recommendations.

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[10] "Urban" is a statistical concept. Governments of small or relatively rural countries may simply declare one or more settlements urban, regardless of size or function. In many countries, the definition is based on a threshold number of inhabitants ranging from a few hundred to more than 10,000.

[11] Black, Maggie. Mega-Slums. The Coming Sanitary Crisis. A WaterAid Report. 1995. Electronic version. http://www.oneworld.org/wateraid/megaslums/

[12] The World Bank. A World Bank Policy Paper. Urban Policy & Economic Development: An Agenda for the 1990s. Washington, D.C.: The World Bank, 1991; UNDP. Cities, People & Poverty. Urban Development Cooperation for the 1990s. New York: UNDP, 1991.

1.3 The 1996 Beijing Urban Water Conference

A major international conference on urban water management was held in March, 1996, as part of the preparatory process for *Habitat II. The Beijing Water Conference* was organized around the theme of "water for thirsty cities."[13]

The conference focused on the link between the growing water crisis facing cities across the world and the resulting threats to sustainable social and economic development. Five key issues were addressed:

- Resource management and allocation
- The cost and financing of water services
- Demand management and control of wastage
- Building partnerships between the public sector, communities, NGOs and the private sector
- Changing current patterns of depletion and degradation of water resources

The Conference's "Beijing Declaration" served to reinforce the Dublin Principles, and added a fifth, recognizing the critical need to mobilize financial resources from both the international community and consumers. In effect, the Conference represented the formal convergence of the water and urban agendas.

[13] UNCHS. Managing Water Resources for Large Cities and Towns. Report of the Habitat II International Conference. 18-21 March, 1996, Beijing China. Nairobi: UNCHS, 1996.

Section 2.0 - The Exploration's Findings

The Exploration's feasibility assessment was conducted by means of eight criteria, summarized in Table 5.[14] On the basis of these criteria, the Exploration found that IDRC-support of an Urban Water Management (UWM) Program Initiative grounded in the basic principles of the emerging international agenda is feasible. Beyond its feasibility, a UWM PI would place IDRC in a strong leadership position in relation to other donor and non-donor development agencies.

TABLE 5 SUMMARY OF FEASIBILITY CRITERIA

Criterion	Feasibility	Comments
1. Relevance to the broader development agenda	High	Both urban and water management are rapidly evolving areas, receiving considerable interest, and requiring new ideas, tools, & approaches.
2. Donor interest	High	Concrete interest even without formal IDRC commitment. Opportunity for revenue diversification from consulting research.
3. Relevance to IDRC	High	Extensive history of IDRC support for urban water research. Considerable activity in the urban water sector at present, but in ad hoc manner.
4. Critical mass of activities	Moderate	Based on a combination of active projects, and IDRC support to establish core of new projects.
5. IDRC scientific capability	Moderate	In principle, but staff are devoted to other activities, & many water experts have moved on.
6. Opportunities for networking	High	Explosion of activity and networks, strong opportunity for IDRC to play significant role and influence international agenda.
7. Opportunities for Canadian Collaboration	High	Excellent opportunity to build on strong Canadian information and environmental technologies in municipal water & wastewater.
8. Likelihood of impact	High	High impact expected from a research strategy focused on smaller cities, based on broad participation, and involving long-term partnership with selected municipalities.

[14] These criteria were based on a document entitled "Criteria for Reviewing PIs in 1996-7" dated 29 March 1996, which included eight criteria adopted by the RRAF on March 26, 1996.

More specifically, the Exploration determined that the focus of a future UWM research program should be on improving water and wastewater services to the urban and peri-urban poor. This focus is in keeping with IDRC mission. This implies:

- improved drinking water and sanitation facilities quality
- increased quantity of drinking water
- equitable and affordable tariffs

At the same time, the Exploration concluded that a successful urban water management program should address all income groups. These findings translate into the following two research objectives:

- increasing water supplies and financial resources available to municipal utilities through a combination of demand management initiatives and alternative institutional arrangements; and,
- exploring the range of centralized and decentralized managerial, institutional, policy and technical options for providing equitable water and sanitation services to currently unserved communities.[15]

2.1 Relevance to the broader development agenda

While it has been a subject of concern for at least twenty years, the need to rethink the approach to urban water management has taken on greater urgency only since the early 1990s. Because of its scale, pace and complexity, urbanization has quickly rendered obsolete many of the conventional mechanisms for delivering water and sanitation services in cities and towns. While there is agreement on the principles underlying the new approach to urban water management, there remains relatively little understanding of the practical ways in which these can be applied. As will be discussed in the next section, this finding is relevant to most agencies, including the World Bank and major bilateral donor agencies.

The research results of a future UWM program would contribute to the operationalization of these principles. As a result, a future program's research results would be relevant to government, donor and executing agencies struggling with the new approaches, new tools and new ways of thinking required to design, implement and manage relevant urban water policies and programs.

2.2 Concrete donor interest

A second indicator of the feasibility of a UWM program is the level of interest by donor agencies in collaborating with IDRC, determined primarily through face-to-face meetings. In general, there was a very strong and positive response to the idea of collaborating with IDRC in the area of urban water management. This was due to the fact that, without exception, all agencies approached by the

[15] The three areas of research included in these two objectives-demand management, institutional management options, and servicing the unserved-were used as the focus of discussion for the Exploration's Workshop in Jaipur.

Exploration are struggling with the process of determining how best to address urban water management programming.

Surprisingly, a few agencies were willing to discuss seriously possible co-funding arrangements despite the absence of formal IDRC commitment. Table 6 identifies those agencies which have expressed more concrete interest in co-funding IDRC projects. However, IDRC will have to commit itself to a UWM program, and to some level of concrete financial support, prior to furthering any co-funding discussions with these donor agencies.

TABLE 6 AGENCIES SHOWING CONCRETE INTEREST IN CO-FUNDING

AGENCY	RESEARCH INTEREST	FUNDING LEVEL
Asian Development Bank (ADB)	• Demand management in Quetta, Pakistan	n/a[16]
Canadian International Development Agency (CIDA)	• Water, sanitation & health linkages • Program & project management tools	n/a
Swedish International Development Cooperation Agency (Sida)	• Demand management in Rajasthan, India	n/a
US Agency for International Development (USAID)	• Demand management in India • Program performance indicators	US$50,000 maximum
Organization of Petroleum Exporting Countries (OPEC) Development Fund	• Servicing the unserved • Demand management	US$100,000 maximum
United Nations Development Programme (UNDP)	• Baseline assessments	n/a
World Bank/UNDP Regional Water and Sanitation Group-South Asia	• Institutional arrangements and technologies for peri-urban sanitation	n/a

2.2.1 Bilateral Donor Agencies

Face-to-face meetings were held with bilateral agencies from Canada, Denmark, Germany, Sweden, and the United States. Correspondence was also received from the British Overseas Development Administration (ODA). These contacts indicate that while there is general recognition of the importance of moving from an exclusive focus on rural programming to address peri-urban and urban water and sanitation development, bilateral agencies are at very different stages of developing and implementing urban water strategies and policies. Equally evident is that no agency is well advanced

[16] Predictably, it is difficult to assess the potential funding level for an IDRC program at this early stage.

in its urban water program development or in designing specific projects consistent with the new urban water management agenda.

In general, there is an opportunity to use a UWM program to assist blateral agencies in the development of relevant program management tools for selecting, designing, monitoring, and evaluating urban programs and projects. If properly integrated with bilateral agency programs, lessons from IDRC-supported UWM research will allow agencies to better implement their projects.[17]

Canadian International Development Agency (CIDA)[18]

Despite an organizational culture based strongly on sectoral programming, CIDA has accepted the value and legitimacy of the emerging urban and water agendas. In 1996, CIDA hired an Urban Development Specialist to prepare an urban development strategy. CIDA's Senior Water Specialist is similarly engaged in developing a water management strategy. Both these officers are interested in using the results of the Exploration to assist in the development of their respective strategies.

CIDA is specifically interested in IDRC projects or programs that could strengthen a CIDA initiative. For example, the Urban Development Specialist has pointed to the need for evaluation and monitoring tools for program officers who will be responsible for future urban development projects. The possibility of a joint IDRC-CIDA urban water initiative that could be used to develop urban programming tools was discussed. To this end, the Exploration has been asked to submit a concrete description of the proposed Urban Water Program in order to allow CIDA to formally consider ways in which to incorporate a research component into its programming. The Exploration was also invited to share its knowledge in the area of integrated urban water management with key members of CIDA's staff.

Swedish International Development Cooperation Agency (Sida)[19]

Both urban management and water management are emerging priorities at Sida. The greatest opportunity for collaboration is with Sida's Urban Development Division, established within the Infrastructure and Economic Development Department (INEC) in 1995. The Division is in the process of designing urban water programs in Rajasthan and Palestine. Sida's Urban Division is

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[17] For example, changes to the design of a World Bank water supply project in Uganda involving the construction of hundreds of boreholes in a local aquifer resulted in savings of millions of dollars. These changes were based on the results of an IDRC-supported groundwater research project, which showed the water to be flowing in a different stratum then originally believed by the Worl d Bank.

[18] Based on discussions with Isabel Hentic, Urban Development Specialist, and Guy Carrier, Senior Water Specialist.

[19] Based on discussions with Goran Tannerfeldt, Head Urban Development Division, and Johan Holmberg, Director Environment and Natural Resources Department.

particularly interested in demand management research which could support their Rajasthan program. In fact, the discussion addressed specific mechanisms Sida could use to co-fund an IDRC initiative.

A Water Resources Management Group, located within the Environment and Natural Resources Department has traditionally been oriented towards rural water & sanitation. However, the group is actively exploring ways to apply their expertise to peri-urban areas, and recently published a water resources strategy for Southern Africa.

United States Agency for International Development (USAID)
USAID was very receptive to the Exploration during an early meeting with its Centre for the Environment. USAID appears to be engaged in innovative work in the area of urban water management, including the use of a voucher program which allows NGOs to conduct research. While no concrete discussions regarding collaboration with IDRC took place at that time, the subject was discussed during a later meeting with Kamran Khan, Regional Housing and Urban Development Officer for South Asia. Khan indicated that USAID is very willing to look at specific IDRC proposals for urban water research, and that he would seriously consider the idea of contributing to a demand management program in India, along the lines of IDRC's Municipal Water Pollution Control Project in Ukraine.[20] He also specified that he is in a position to personally approve funding of less than $50,000.

Deutsche Gesellschaft fur Technische Zusammenarbeit (GTZ) [21]
Face-to-face discussions took place with a number of GTZ officers responsible for urban water management programming. GTZ is very interested in the outcome of the workshop and exchange of information and experience, though it is not itself well advanced in urban water programming. GTZ may be interested in parallel funding, but not in co-funding IDRC projects at this time.

Danish International Development Agency (Danida)
Discussions were held with Jens Bjerre, Danida's representative in India. Danida's India program is currently developing an urban programming strategy. The new strategy will likely focus on small towns of under 10,000 population. While this focus is incompatible with the Exploration, Bjerre did suggest that he would like to include larger towns in the strategy. He also indicated that Danida's other country programs in Africa may very well have a strong bias towards more urban water programming. Bjerre had agreed to participate in the Jaipur workshop, but was unable to attend due to unforeseen circumstances.

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[20] A potential constraint is that Khan's posting in New Delhi is up sometime in 1997. However his next posting is Washington, so it may be possible to continue to work with him.

[21] Based on discussions with several members of the Water, Waste and Resources Department and Urban and Rural Development Programs Department.

Overseas Development Administration (ODA)
While no meetings took place with the ODA, correspondence with ODA's head office in the UK, and its India Office indicate ODA's sincere interest in staying in contact with the Exploration's activities. Furthermore, ODA's India program was cited as a good example of innovative work being carried out in the urban water sector. Unfortunately, there was insufficient time to arrange for a meeting in New Delhi.

Finnish International Development Agency (FINNIDA)
Japanese International Cooperation Agency (JICA)
Norwegian Agency for Development Cooperation (NORAD)
While no discussions took place with these agencies, review of annual reports and related documentation suggests that possible collaboration should be explored.

2.2.2 United Nations Agencies

Several UN agencies and programs were consulted, both through face-to-face meetings and through correspondence. As the driving force behind the current urban and water agendas, these agencies were fully supportive of the idea of urban water management research and willing to assist in co-ordinating a future initiative. While there is ample choice for IDRC to collaborate in emerging UN-initiated programs, financial support from these agencies will be far more difficult to secure. In addition, the heavy bureaucracy associated with these agencies suggests that designing a program amenable to the interests of both IDRC and UN will be very difficult. However, dealing with regional offices of these agencies has proven a useful strategy for overcoming some of these bureaucratic challenges.

United Nations Development Programme (UNDP)
Early meetings were held with Frank Hartvelt of the UNDP's New York Office. Hartvelt is actively involved in UN water management activities, and is very familiar with IDRC. The UNDP is not supporting any specific urban water management activities. Its primary water management programme was initiated in 1993, and focuses on capacity building through comprehensive river basin water sector assessments. The UNDP is also in the process of developing a new water management strategy. Consequently, new ideas are welcome. While there was little opportunity to discuss concrete collaboration, Hartvelt was highly supportive and congratulatory of what he described as IDRC's "return to the water sector." In a later telephone conversation, Hartvelt remained committed to collaborating with IDRC on an urban water initiative once IDRC's interests were more clearly defined.

Local Initiative Facility for the Urban Environment (LIFE)-Tanzania
LIFE is a UNDP-supported programme providing grants to NGOs, CBOs and local authorities. Since its inception, Tanzania's LIFE Programme has been putting considerable emphasis on the provision of water supply to poor urban communities. Small scale projects have been supported involving low-cost and environmentally friendly technologies such as rainwater harvesting and shallow wells. Mary Kibogoya, LIFE-Tanzania's National Coordinator, is interested in developing a link between IDRC and LIFE in the area of urban water management.

United Nations Centre for Human Settlements (UNCHS)-Habitat[22]

UNCHS is currently supporting both the Sustainable Cities Programme (SCP) and the Urban Management Programme (UMP). UNCHS' Settlement Infrastructure and Environment Programme supports research activities in urban water supply, sanitation, drainage and solid waste management. The agency is very interested in discussing possible collaboration with IDRC in urban water resources management. The IDRC has been invited to collaborate on a UNCHS/ United Nations Environment Programme-initiated proposal for a *Multi-Agency Programme for Integrated Water Resources Management in peri-urban areas.*

World Health Organization (WHO)[23]

WHO has traditionally focused on rural water and sanitation. It is in the process of devoting greater attention to cities. For example, monitoring and assessment of drinking water supply and quality in urban areas is now a high priority within its water and sanitation monitoring program. The development of this program will begin in 1997 and is to conclude by 2003. Richard Helmer of WHO's Urban Environmental Health Program specifically indicated his interest in participating in future discussions related to program design, and raised the possibility that IDRC could execute a program on WHO's behalf.

UN Department for Development Support and Management Services (DDSMS)
UN Economic and Social Commission for Asia Pacific (ESCAP)

While no contact was made with either of these agencies, both appear to be meaningfully involved in urban water management activities.

2.2.3 International Financial Institutions

Asian Development Bank (ADB)[24]

Based on discussions with several officers it is apparent that the ADB has embraced the Dublin principles. However, it is equally clear that the Bank's thinking process has not yet impacted on the design of its urban water projects.[25] In fact, the emergence of a new generation of ADB-financed

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[22] Based on correspondence with Sering Jallow, Research and Development Division.

[23] Based on discussions with Richard Helmer, Urban Environmental Health Division, and Dennis Warner, Rural Environmental Health Division.

[24] Based on discussions with Asad Ali Shah, Manager, Arthur McIntosh, Senior Project Engineer, and David Boggs, Project Engineer all in the Water Supply, Urban Development and Housing Division, and Wouter Arriens, Water Resources Specialist in the Office of Environment & Social Development.

[25] Discussions with a Canadian consultant who served briefly as an ADB Urban Development Specialist indicate that the ADB has only recently begun the process of developing an urban policy distinct from that of the World Bank's.

urban water projects is constrained by several factors. These include a lack of funds (i.e. An $80 million infrastructure project may only have a feasibility budget of $600,000, which is devoted largely to social and environmental impact assessments), and the nature of the ADB reward system (i.e. Officers only receive *excellent* evaluations if their loans are approved, creating a strong disincentive to innovate in project design.)

The focal point for urban water management lending and technical assistance is in the ADB's Water Supply, Urban Development and Housing Division (East and West). David Boggs, Project Engineer, is seriously considering the inclusion of a demand management component into a water supply study he will be preparing for Quetta, Pakistan later this year. The overall budget for the Quetta study will be $800,000. Arthur McIntosh, Senior Project Engineer, expressed an interest in a metering study similar to the one being carried out in Ukraine, a study of the impact on unaccounted for water of formalizing services to the urban poor, and a study of privatization.

Potential modalities for support include country-specific technical assistance grants and regional technical assistance grants (RITAs). However, since there is great demand for these funds--those for 1997 are already allocated-, a one- to two- year lead time is required. Even if a research component is included as a project is developed, it will undergo a competitive bidding process. IDRC could be brought into a specific project through CIDA co-financing.

In addition to these opportunities for collaboration, IDRC has also been encouraged to provide input to the ADB's Water Policy. The water policy, to be based on the 1996 ADB document entitled *Towards an Effective Water Policy,* should be finalized in 1997.

The World Bank[26]

Both in terms of financial input and intellectual development, the World Bank is a leading player in the area of urban water management. However, this leadership is limited largely to the policy domain, with little progress occuring at the level of program or project design. As a result, Bank-financed projects continue to be dominated by conventional approaches to increasing water supply and sanitation services. While the Bank's focus has been on sectoral lending and has focused largely on rural water and sanitation, this focus is gradually changing in recognition of the "new agenda." For example, both institutional capacity building and integrated urban water management are taking on increasingly important roles within the current bank lending framework. Increasing attention is also being paid to the concept of demand management within Bank lending and technical assistance.

While the Bank is theoretically interested in supporting urban water management research which strengthens its lending programs, it is difficult to determine how this can be practically achieved.

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[26] Based on a literature review and discussions with Brian Grover and Harvey Garn of the Transport, Water and Urban Development Department, and Christopher Couzens and Shawki Barghouti of the South Asia Country Department.

Theoretical opportunities for research include the Project Preparation Facility, which provides a maximum loan of $500,000 per project, as well as folding a research component into active loans. Pursuing these ideas will require continued dialogue with sympathetic program officers. In addition, dealing with field officers is far more productive than Washington-based Bank bureaucrats.

World Bank-UNDP Regional Water and Sanitation Program-South Asia[27]

Discussions were held during the Jaipur Workshop with the Program's Regional Director for South Asia, Robert Boydell. The Director is very interested in working with IDRC on urban water research, with co-funding a possibility as long as the research is within the interests of the Water & Sanitation Program. Environmental sanitation is of greatest interest, focusing on the linkages between unserved peri-urban areas, central sewerage systems, and new (wealthy) developments. Research could address technical approaches (e.g. sludge from septic tanks or sewage lagoons being emptied into the central sewage treatment plant) and institutional linkages between peri-urban slums, utilities, and private developers.

2.2.4 Private Donor Foundations

Ford Foundation-India

Face-to-face consultation took place with Ujwaal Pradhan in New Delhi. While the current program has no urban water component, the Foundation recognises the value of designing programs to support peri-urban and urban communities. Two areas of interest are transferring lessons on community organization and poverty alleviation from rural to peri-urban settings, and dealing with conflicts between urban water users. These types of projects will focus on demand management, and softer approaches to water management. As a result, future initiatives will require relevant program management tools for selecting, designing, monitoring, evaluating urban programs and projects. Continued contact should be maintained.

2.2.5 Other Donors

Organization for Petroleum Exporting Countries (OPEC) Fund for International Development[28]

Since it was set up twenty years ago, the OPEC Fund's priority has shifted from capital projects and debt relief to the social sector. Two explicit targets for grant money are research for development, and institutions whose work benefits developing countries. In 1995, grants to other institutions included $60,000 to ICARDA, $100,000 to WHO (tropical disease research), and $100,000 to UNICEF. The

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[27] The Regional Water and Sanitation Program's Nairobi office was represented at the workshop by Andrew Makokha, a consultant. Perhaps because he is a consultant, Makokha was unable to provide any concrete feedback. However, the decision to send a representative, partially at their own expense, indicates a serious interest in the subject on the part of the Eastern and Southern Africa office.

[28] Based on discussions with Abdel Kader Benamara, Director of Research & Information.

Fund reacted positively to the idea of co-funding and asked IDRC to submit a proposal. There is some urgency is following-up on this opportunity. While the Fund is presently not well-known amongst recipients, this will change as aid budgets continue to dwindle and competition for funds increases.

Water is one of the Fund's current priorities. While they have worked primarily in rural areas, the Fund's mandate could include urban water if the proposal was appropriate. The Fund's Research Director is interested in research on servicing the unserved, but also seemed open to the idea of demand management.

City of Edmonton

During the Jaipur workshop, USAID expressed interest in the idea of developing a demand management project in India, similar to the work being supported by IDRC in Ukraine. The Municipal Water Pollution Control Project in Ukraine includes a component which involves identifying water consumption patterns for residential users by installing water meters, assessing and designing a water conservation plan based on data collected from meters, and forming the basis of a user pay tariff system. Myron Lahola, responsible for the Ukraine project and on leave from the City of Edmonton, has contacted the City and indicates they are prepared to donate meters for a future project. (The City of Edmonton has already donated meters to the Ukraine project.) A downstream idea for an India project is a joint venture between a Canadian and Indian company, to manufacture water meters in India.

2.3 Relevance to IDRC mandate and programming

The original motivation for carrying out the Exploration was IDRC's extensive historical involvement in urban water management research. A 1995 evaluation of IDRC urban water management research identified 75 projects supported since 1973, carried out in all major regions and across all major disciplines.[29] Table 7 highlights the extent of IDRC's experience in water and urban development programming since 1973. In this sense, there is ample historic precedent for the support of an urban water management research program.

The evaluation also found that these projects lacked a specific program focus and overall strategic direction. While IDRC has undergone significant changes since 1995, urban water management research continues to play an extensive, though implicit, role in the organization's programming. This is evident both in terms of IDRC's thematic objectives, and at the level of programming (Table 8). An urban water management research program would not only provide coherence to this range of initiatives, but would also allow existing Program Initiatives to better focus their research activities.[30]

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[29] Frojmovic, Michel. Urban Water Management Research at IDRC: Impacts, lessons learned and recommendations for future research. Ottawa: IDRC, December 5, 1995.

[30] There is already evidence that this is occurring. While it will continue to support urban wastewater reuse, the Cities Feeding People PI will no longer address urban groundwater management. Similarly, members of

TABLE 7 IDRC INVOLVEMENT IN URBAN WATER PROGRAM ACTIVITIES[31]

Protection of water resources	
• Sanitary waste disposal facilities	x
• Urban storm-water run-off and drainage	
• Waste-water, solid waste recycling/reuse	x
• Control of industrial pollution sources	
• Protecting watersheds from forest cover degradation and upstream activities	x
• Research on contribution of forests to sustainable water resources development	x
• Best practices for agrochemical use	x
Efficient and equitable allocation of water	
• Reconciliation of development planning with available water resources	
• Satisfaction of basic urban water needs	x
• Introduction of water tariffs	x
Institutional/legal/management reforms	
• City-wide approach to water management	
• National & local land use plans which consider water resources development	x
• Use of NGOs, private sector, local people	x
Public participation	
• Encouraging rational water utilization	
• Sensitizing public to water quality protection	
• Participation in waste collection, recycling, elimination	x
Local capacity building	
• Legislation, policies to promote urban water and waste management investments	
• Autonomy of city water, waste-water and solid waste utilities	
• Human resource development	
Enhanced access to sanitary services	
• Water, sanitation and waste management programmes for urban poor	x
• Water supply and sanitation technologies	x
• Technologies/service levels based on user preferences and willingness to pay	x
• Involving women in water management	x
• Community management of water supply systems and communal latrines	
• Rehabilitating existing systems and correcting O&M inadequacies	

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the People, Land and Water PI have made a conscious decision not to support research focusing on the management and delivery of water within urban areas. Discussions with PI team leaders made it clear that both these decisions were based on the direction being taken by the Exploration.

[31] This table is based on *Water and Sustainable Urban Development Program Activities* identified in Chapter 18 of *Agenda 21*.

TABLE 8 IDRC URBAN WATER MANAGEMENT INITIATIVES SINCE 1995

INITIATIVE	REGION	RESEARCH AREAS
Program Initiatives		
Cities Feeding People	Global	Wastewater reuse, groundwater management
Ecosystem Health	Asia	Health impact
People, Land and Water	Africa	Demand management
Explorations		
Integrated Approaches to Safe Drinking Water	LAC	Household drinking water technologies, water toxicity assessment, water quality monitoring
Urban Water Management	Africa, S. Asia	Improving water and sanitation services to the urban and peri-urban poor
Secretariats		
Economy and Environment Program for Southeast Asia	SE Asia	Water pricing
Environmental Management	LAC	Municipal water & wastewater information and environmental technologies
Office for Central and Eastern European Initiative	Ukraine	Demand management, water metering, leak detection
Other Initiatives		
Latin America Urban Water Management Network	LAC	Network of Latin American university programs and municipalities
Urban Water management internship	Global	Evaluation of IDRC UWM projects

At the thematic level, urban water management research is most directly relevant to IDRC's *Equity in Natural Resource Use* theme. Water is the main sectoral focus of this theme, with the full range of water uses being considered. Furthermore, both rural and urban research will be supported under this theme. The theme addresses a range of service delivery research issues, including demand management, and institutional capacity building. Within the theme, the People Land and Water Program Initiative (PI) is oriented towards many of the same research priorities as the exploration. The recent decision to limit the PI's activities to non-urban water research suggests a complementary role for the types of research identified by the Exploration.

Urban water management research also complements the *Food Security* theme. Within this theme, some UWM research is supported in the *Cities Feeding People* PI, which addresses urban wastewater reuse and municipal management capacity. In addition, the theme's natural resource management research focus is described in terms of the "impact of human activities from major cities and communities in the developing world on coastal waters."

2.4 Minimum critical mass of activities

A critical mass of related urban water management activities already exists in the form of several active projects being supported by IDRC. An urban water management program could provide a

logical home for several of these projects. The following table lists several examples of urban water projects (and responsible officers) currently being supported in Africa and Asia which could form the core of an Urban Water Management Program:

AFRICA	ASIA
◊ Water demand management studies in Eritrea, (D. Brooks) Mozambique (H. Krugmann), South Africa (W. Leppan)	◊ Local water management in India and Nepal (A. Gyi, D. Brooks)
◊ Rainwater harvesting in peri-urban areas in Tanzania (H. Krugmann)	◊ Economic instruments for water pollution control in India (R. Medhora)
◊ Household water demand in Dar es Salaam (H. Krugmann)	◊ Urban wastewater reuse in Vietnam (S. Tyler), Cambodia (A. McNaughton)
◊ Urban water pollution in Dar es Salaam (H. Krugmann)	◊ Groundwater research in Jakarta (N. Faruqui)
◊ Integrated Water Supply & Sanitation, Egypt (N. Faruqui)	
◊ Rooftop rainwater catchment in Gaza (D. Brooks)	

2.5 IDRC scientific capability

In addition to staff expertise in economics and civil engineering, experience in anthropology, health sciences, political science, management science, and urban management and planning will also be required.

The IDRC has accumulated considerable experience in the area of urban water management research since 1973. However, this experience is less extensive when measured in terms of actual available staff. Many program officers previously involved in urban water management activities have since left the Centre. It is also unclear how many of those remaining have time to devote to urban water management activities. In principle, however, IDRC continues to possess a strong core of professionals.

Several IDRC program officers have expressed a specific interest in the Exploration and could participate in a future Program Initiative, depending on the overall nature of the program and their availability. These include D. Brooks, C. Davis, D. Deby, H. Krugmann, W. Leppan, and S. Tyler. However, this list does not preclude the involvement of other IDRC officers.[32]

[32] The names of IDRC program officers with urban water management-related expertise are included in an annex to the report.

2.6 Opportunities for building on and expanding existing networks

The success of a a future UWM Program Initiative would depend, in part, on access to a diverse network of individuals and organizations involved in urban water management activities. Successful networking offers the following benefits:

1. allows IDRC to remain in contact with international, and donor agency priorities in order to keep abreast of emerging trends and showcase IDRC's results
2. provides an opportunity for more effective and targeted implementation of projects and dissemination of project results
3. provides IDRC with an opportunity to influence research priorities of major donor agencies

The Exploration has identified several new and existing networks offering IDRC an opportunity to take advantage of these benefits. However, IDRC will have to carefully target its involvement in these networks if it is to maintain its distinctive voice and remain true to its mandate.

2.6.1 The Global Water Partnership (GWP)

The GWP is an international network whose purpose is to convert the principles of the Dublin and Rio Conferences into specific services where they are needed, and as close to the users as possible. The network's highest policy-making body is the Consultative Group, comprised of all network members and currently Chaired by the World Bank's Vice-President for Environmentally Sustainable Development. In addition to the World Bank, a second major partner is the UNDP.

Through its Technical Advisory Committee (TAC), the GWP defines the conceptual framework for water resources management, and identifies priority investment areas for donor agencies in three sub-sectors: water & sanitation, irrigation & drainage, and urban water. TAC's first two meetings focused on the first two of these sub-sectors. Two TAC meetings are planned for 1997. The key topic of the Manila meeting (8-12 June) will be *water and food security*. The key topic of the Latin America meeting in November (in Montevideo) will be *water and big cities*. There will be a preliminary discussion of the latter topic by the TAC in Manila during its closed session.

While TAC does not conduct research, it is in a position to identify research priorities. Consequently, influencing TAC may impact on the research priorities of the World Bank, UNDP, ADB, Sida and other major donors. Johan Holmberg, GWP Executive Secretary, expects that the TAC will declare urban water to be an under-researched area, and will work with donor agencies to prioritize and fund research.

IDRC has been invited to share the Exploration's findings with the TAC. While he fell short of inviting IDRC to make a formal presentation, Johan Holmberg did indicate that TAC meetings provide an open forum for interested development agencies. The IDRC can use the GWP meeting scheduled for November to position itself as one of the first agencies supporting research in urban

water (as was the case with urban agriculture). If this is successful, donor agencies would be more likely to turn to IDRC for research support.

The GWP's inaugural meeting was held in August 1996.

2.6.2 Water Supply and Sanitation Collaborative Council (WSSCC)

The Council emerged in 1991 as a by-product of the Water Decade. The Council's mission is to enhance collaboration among developing countries and ESAs so as to accelerate the achievement of sustainable water, sanitation, and waste management, with special attention to the poor. In contrast to the broader conceptual approach being taken by the GWP, the Council is a network within the water & sanitation sub-sector.

The Council's Co-ordinator, Ranjith Wirasinha, expressed a strong interest in having IDRC return to its involvement in Council activities. While the Council will likely play an increasingly marginal role over the next few years in comparison to the emerging GWP, it does support several networks and working groups that may be of interest to IDRC:

- Operations and Maintenance Network. Leader, Jose Hueb: WHO
- Network on Services for the Urban Poor: Leader, Ivo Imparato: UNCHS-Habitat
- Institutional & Management Options Working Group. Leader: Frank Hartvelt, UNDP
- Water Demand Management & Conservation Working Group. Leader: Lester Forde, Trinidad Water & Sewerage Authority
- Working Group on Promotion of Sanitation. Leader: Mayling Simpson-Hebert, WHO

2.6.3 World Water Council (WWC)

The WWC, initiated in 1996, is a non-profit, non-governmental organization meant to raise awareness of water issues. While the WWC is eager to attract membership, its value-added to IDRC is unclear considering the roles being played by the GWP and Collaborative Council.

2.6.4 Water Utility Program (WUP)

The WUP was launched in August 1995 in Abidjan, Ivory Coast, with seed money from the World Bank. It is a rolling three-year program (1996-98) aimed at contributing to the development of drinking water services in urban and peri-urban areas in Africa, particularly for the poor. Its focus is on bringing together utilities and end-users, including community associations and the informal private sector. Program partners include the Union of African Water Suppliers (UAWS), Abidjan, the Regional Centre for Affordable Drinking Water and Sanitation (CREPA), Ouagadougou and Training Research and Networking for Development (TREND), Kumasi.

WUP is an open partnership for water utilities, donors, NGOs, training and research institutes. Its planned program activities closely relate to those being considered by the Exploration:

- Drinking water and sanitation sector development: establishing strategies which enable utilities to be autonomous, promote use of commercial management rules, set up incentives for improving performance, and move towards decentralized management

- Mastering water utilities management: promote cross-fertilization of diverse experiences and best practices
- Developing drinking water and sanitation services in peri-urban areas: Proposed projects include typology of successful case studies; collaboration between formal and informal sector; informal sector capacity building; technologies for peri-urban areas.
- Networking: Creation of research and expertise networks and dissemination of information through modern means, such as the internet.

2.6.5 The Sustainable Cities Programme (SCP)

SCP has been in operation since 1990 and is active in over 15 countries. Its focus has been on East Africa, though it includes initiatives in all major regions. It is a joint facility of UNCHS-Habitat and UNEP for the development of a sustainable urban environment, founded on broad-based public participation. The SCP offers an extensive network of local authorities, NGOs, community associations, and donor agencies with an interest in urban management issues, including water and sanitation.

Bernd Decker, a member of SCP's small core of Nairobi-based staff participated in the Jaipur workshop. He is quite eager to continue sharing information with the Exploration.

2.6.6 International Council for Local Environmental Initiatives (ICLEI)

ICLEI is a membership organization of local governments and associations of local government dedicated to building local government's capacity to solve and prevent local and global environmental problems. ICLEI's Secretariat, based in Toronto, is in the process of defining its water management strategy. ICLEI's Regional Program in Africa is struggling to promote many of the same issues addressed by the Exploration in African urban local authorities where water resource management and sanitation are serious problems. The Africa Regional Coordinator was eager to participate in the Jaipur Workshop, but was unable to at the last moment. He indicated the relevance of the Exploration to the work being conducted by ICLEI, particularly with respect to Eastern and Southern African municipal authorities.

2.6.7 Jaipur Workshop Network

The workshop organized by the Exploration brought together 30 researchers, policy makers, water utilities, NGOs, and donor agencies from Southern and Eastern Africa, South Asia, Southeast Asia, Latin America, and Ukraine. The workshop participants form a sub-set of about 400 individuals contacted during the course of the Exploration. The opportunity now exists to facilitate on-going communication within this network.

2.6.8 Africa 2000 Initiative for Water Supply and Sanitation

Africa 2000 was launched in September 1994 by Ministers of Health of 46 African countries. It is an international co-operative effort to expand water supply and sanitation services in Africa. The first Regional Consultation took place in June 1996 in Brazzaville, the Congo.

2.6.9 Global Urban Research Initiative (GURI)

Begun in 1991 at the University of Toronto, GURI's aims to build local knowledge within the development community in order to better inform government policy and international assistance programmes in the field of urban development. GURI includes some 48 countries represented by key members of the research community, NGOs, government planners and policy-makers.

2.6.10 International County/Municipal Management Association (ICMA)

ICMA is a non-profit professional association based in Washington, D.C. representing 8,500 local government officials and urban experts. It has an active international division involved in overseas municipal capacity building.

2.6.11 International Network for Water, Environment and Health (INWEH)

The network was begun in 1996, with the support of IDRC and Environment Canada. Its focus is on environmental health aspects of water. It is a network of water stakeholders aimed at improved decision making and problem solving in developing countries. INWEH's Director has expressed interest in IDRC's Urban Water Management Initiative. INWEH is housed in the McMaster University campus of the United Nations University.

2.7 Opportunities for Canadian collaboration

Several opportunities exist for involving Canadian interests in an Urban Water Management Program. In general, these involve building on Canadian strengths in municipal water and wastewater information and environmental technologies. While several preliminary contacts were made, this area will require further exploration. The types of Canadian collaboration being considered are as follows:

2.7.1 Private sector

Collaboration could take place with businesses involved in water/wastewater environmental and information technology development. The Exploration met with several members of the Southwestern Ontario-based Local Environment Businesses Network. This network consists of local companies and organizations with a business interest in the environment. While the focus is on environmental technology firms, the network also includes management consulting firms, environmental NGOs and other organizations. A similar network exists in the Regional Municipality of Halton-the Halton Environmental Technology Group.

2.7.2 Municipal capacity building organizations

Both the Toronto-based Canadian Urban Institute and Ottawa-based Federation of Canadian Municipalities are actively involved in international municipal capacity building activities. Both these organizations have built up extensive networks of Canadian and developing country municipal managers. During preliminary discussions, Brock Carlton, Deputy Director of FCM's International Office, agreed in principle to co-sponsor a workshop on Canadian collaboration in the area of urban water management.

2.7.3 Universities

The Exploration met with two Canadian university consortia involved in urban water management research. The Groupe Inter-universitaire de Montréal (GIM) is a network of four university research centres: McGill University's School of Urban Planning, Université de Montréal's Institut d'urbanisme, Université du Québec à Montréal's Département d'études urbaines and INRS-Urbanisation. GIM was recently awarded a five-year CIDA grant to undertake research focusing on delivery of urban infrastructure services in four countries: Costa Rica, Haiti, Mexico and Trinidad & Tobago.[33] The program focus is on municipal finance, privatization, and maintenance, with water playing a central role.

A second Canadian university initiative, known as the *3x4 project consortium,* consists of four Canadian universities (UBC, U. of Toronto, McGill, and U. of Montreal) and three Chinese universities (Peking, Tsinghua, Nankai). The consortium submitted a proposal to CIDA to undertake a five-year $900,000 study to determine how water shortages in the Chinese capital region may be solved through implementation of a number of policy domains, including water pricing and water recycling. There are many possible parallels between this study and a future urban water management program. This proposal was recently approved.[34]

2.7.4 First Nations Organizations

There are two possible points of collaboration. One opportunity is to work with a growing network of First Nations businesses involved in environmental technologies. A second is to establish projects which link water management issues of the South with those of First Nations urban communities in Canada.[35]

2.7.5 Non-Governmental Organizations

Care Canada has been increasingly involved in urban/peri-urban water and sanitation over the past three years. The focus has been on issues of cost recovery and community self-financing. Many urban projects have an underlying and central water component, without the word "water" being an explicit part of these projects. Care Canada is also recognizing that CIDA is moving towards building organizational, institutional capacity, and away from developing infrastructure systems.

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[33] The program's *plan d'execution* will be prepared between March and May, and will be submitted to CIDA in July. The Exploration has been invited to contribute to its design.

[34] Separate discussions were held with the Consortium's McGill and UBC partners. McGill's Office of Technology Transfer was very intrigued by the possibility of holding a joint workshop on urban water management with IDRC. UBC's School of Human Settlements was very interested in the Exploration's approach and offered to assist in organizing a workshop in Vancouver.

[35] Preliminary discussions were held with the Assembly of First Nations (AFN), focusing on the theme of conflict between rural native communities and urban non-native water needs. One response has been to develop aquaculture as an alternative to traditional fishing methods constrained by mega-projects.

The National Round Table on the Environment and Economy (NRTEE) recently carried out a series of workshops on the theme of environmental technologies for more sustainable Canadian municipal water and wastewater services. The resulting report addresses pricing, financing, regulatory, employment, business development and other issues.

2.7.6 Federal Government departments and agencies

Collaboration with Canadian government agencies would be based on two principles: first, the importance of communicating with departments and agencies with similar or overlapping responsibilities; second, the growing interest on the part of the Canadian government to promote export and international development cooperation. Relevant department and agencies include the Canada Mortgage and Housing Corporation, Environment Canada, Foreign Affairs and International Trade, Industry Canada, Natural Resources Canada and Public Works and Government Services Canada.

2.8 Likelihood of impacts

A final criterion considered by the Exploration is the extent to which urban water management research supported by IDRC can be expected to result in significant, positive and measurable impacts. While urban water management research is critically important, actually making a meaningful difference poses a tremendous challenge. In this regard, it is not surprising that most development agencies have avoided directly tackling the urban water sector.

There are at least four potentially serious obstacles to achieving measurable impacts in the area of urban water management:

- The complex bureaucracy operating in an urban environment, particularly larger urban areas.
- The lengthy period of time needed for these impacts to take effect.
- The challenge of developing, managing and sustaining partnerships composed of many and, often divergent, interests
- The difficulty of identifying and measuring impacts associated with institutional, policy, and managerial research.

Increasing the likelihood of achieving meaningful impacts will a program strategy that responds to these challenges. Basic elements of an Urban Water Management Program Strategy are described in this report's final section.

2.9 Conclusion: A leadership role for IDRC

The eight feasibility criteria used by the Exploration were considered necessary but insufficient conditions for the support of a UWM research program. Beyond its feasibility, the Exploration sought to determine whether a UWM program could strengthen IDRC's place in the international development community. In fact, the Exploration's conclusion is that IDRC is in a very strong position to assume a leadership role in the area of urban water management programming.

The leadership opportunity is derived, in part, from the lack of substantive work being carried out by other development agencies. For example, while it took the lead in establishing progressive urban development and water resources policies, the World Bank's urban water lending program remains largely conventional in its approach. For its part, the Asian Development Bank is still in the midst of determining its policy stance. Bilateral international development agencies, including major agencies like the GTZ, are equally lacking in capacity to design programs and projects consistent with the Dublin principles. Closer to home, CIDA is still grappling with basic strategic questions regarding urban development and water management.

The IDRC has arguably already taken the lead on most development agencies on the basis of the Exploration alone.[36] One indication of the recognition being paid to the IDRC, even at this early stage, is the interest expressed by the Global Water Partnership's Executive Secretary in having the IDRC contribute to the development of international urban water research priorities. More recently, the Canadian journal *Ecodecision* approached the Exploration with an offer to devote an entire edition to the subject of urban water management.

This assessment is based on four factors:

An international reputation for excellence

Despite its small budget, and its low domestic profile, IDRC is a well-known and highly regarded development agency throughout the world. This message was heard consistently throughout the course of the Exploration from both bilateral, multilateral and non-governmental development agencies. In several cases, IDRC was specifically praised for its work in water management. Several agencies also indicated a need for high-quality, independent and impartial assessments of urban water management issues, such as privatization. Again, IDRC was cited as an agency that is well placed to support this kind of research.[37]

An Urban Water Management program would take full advantage of this reputation, and continue to reinforce and develop the perception of IDRC as a leader in the area of water management.

A focus on knowledge and research

Because they have only recently emerged, the concepts and principles underlying the urban water management agenda must now be operationalized. As one of the few donor agencies with a focus on research, IDRC is well positioned to contribute to and influence fundamentally this experimental process of operationalization. An Urban Water Management research program would provide a

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[36] This is reflected in several anecdotal events, including the widespread interest in the Jaipur Workshop Proceedings; Sida's interest in acquiring a copy of the Exploration's powerpoint presentation; and CIDA's invitation to the Exploration to share its understanding of integrated urban water management programming.

[37] Examples of inviduals citing IDRC's impartiality in research are Jose Hueb, Leader of the Collaborative Council's Operation and Maintenance Working Group, and Gordon McGranahan of the Stockholm Environment Institute.

framework within which IDRC could explore and develop practical project and program management tools. Similarly, the Global Water Partnership represents an excellent forum for channeling the results of IDRC-supported research into the international development community.

An adaptable organizational culture

A third advantage enjoyed by IDRC is its ability to respond and adapt to rapidly changing circumstances. While this process has been painful, and not without complications, IDRC has emerged from the past five years of change with a far more flexible organizational culture. As a result, IDRC will be more easily able to develop practical and workable urban water management projects. Larger development agencies remain constrained by organizational cultures grounded in conventional, sectoral approaches to development. These agencies will need to draw on the experience of others in order to develop appropriate project management tools, project selection and evaluation criteria, networks of contacts and a range of other resources. An Urban Water Management Program will position IDRC to provide these agencies with the necessary tools, approaches and ideas.

The ability to innovate

A final factor in IDRC's favour is the importance of innovation to the new urban water management agenda. Agencies which succeed in addressing urban water management will be those with a capacity and an aptitude for innovation. The IDRC is in a position to take the lead on a core of innovative research areas in the areas of demand management, institutional arrangements, and servicing the unserved.

The Exploration has taken place at a critical point in the evolution of the urban water management agenda. At this stage, specific urban water management research priorities remain undefined, and the capacity available to most international development agencies in the area of urban water programming remains relatively weak. However, interest in the subject of urban water management is strong and growing. If IDRC does not capitalize on the opportunity to take a leadership role, other agencies will. The challenge facing IDRC is to take the first steps towards building up and consolidating its competence.

Section 3.0 - Recommendations

The remainder of this report outlines the framework for an Urban Water Management Program Initiative, including goals and objectives, types of studies to be supported, a program strategy, and a longer term vision. While this section provides some preliminary detail on the nature of the proposed program initiative, the exploration is not sufficiently advanced to present a more refined research program. As a result, the report's recommendations should be treated as works-in-progress, and will necessarily evolve.

The Exploration's primary recommendation is that the IDRC formally commit itself to the support of an Urban Water Management Program Initative.

3.1 An IDRC Urban Water Management Program

The goal of an IDRC Urban Water Management Program would be to increase the level and quality of water and wastewater services available to urban and peri-urban poor in selected municipalities.

In order to achieve this goal, the Program's objectives would be as follows:

- To increase water supplies and financial resources available to municipal utilities through demand management/supply-side efficiency initiatives and alternative institutional arrangements.
- To explore the range of centralized and decentralized managerial, institutional, policy and technical options for providing equitable water and sanitation services to currently unserved communities.

If successfully implemented, these objectives could be expected to result in the following impacts:

- More sustainable patterns of water production & consumption by urban users
- More rational and equitable allocation of water to urban and peri-urban users
- Reduced degradation of surface and ground water resources

These goals and objectives would be achieved by means of three types of research projects:[38]

- Research capacity building: Building up the capacity of utilities, NGOs, and community associations to work in partnership with local researchers in order to anticipate, identify and respond to urban water management problems with relevant and high quality research.

- Action research: Supporting and conducting high-quality research in partnership with utilities and other end-users which can be translated into policies, institutional frameworks, and technologies.

[38] The second and third types of research are linked and, in some cases, the same.

- Consulting/operational research: Using IDRC-supported research to strengthen urban water programming of other donor and non-donor agencies. This will occur in two ways. First, by providing agencies with basic project and program tools relevant to the urban water management. Second, by using research results to influence the objectives and design of planned program and projects.

3.2 Proposed areas of research

3.2.1 Baseline Data Collection

While there is a tendency to undervalue this area of research, baseline data collection represents an indispensable starting point and an important investment in longer term research results. The challenge underlying these studies is to identify and collect or access the data critical to improving service delivery to the poor, in most cases through management of demand of large volume water users.

The objective of the baseline data collection studies would be to develop a targeted understanding of the urban water sector within a given municipality and to develop the capability to undertake dynamic analyses of both supply and demand factors. The long term objective of these studies would be to build up local data collection and management capacity.

Data would be collected for the range of domestic, industrial, and agricultural uses occurring within the municipality, and specific types of usage by sector. Emphasis would also be placed on both the cost of water and willingness to pay by user and use. An understanding of the range of formal and informal water supply systems would also be necessary.

As a starting point, these studies would identify current institutional responsibilities for data collection, and would determine the level of existing data availability, and data sharing between institutions. Studies would also recommend opportunities for more appropriate institutional arrangements for sharing data, and would identify appropriate information technologies and methodologies for data collection and management.

3.2.2 Demand Management and Conservation

Successful demand management results in greater conservation of water resources and the delay or avoidance of costly investments in water supply and treatment facilities. These studies would address a mix of policy recommendations, regulatory and institutional arrangements, and appropriate water saving and wastewater reuse technologies capable of achieving reductions in water use and waste water production. The focus of these studies would not be on water pricing and tariff-setting studies. Instead, attention would be paid to achieving reductions in household and industrial wastewater through the study of effluent permits, charges, and trading. These studies would also address supply-side inefficiencies including reducing unaccounted-for-water (UFW).

The approach being recommended is illustrated by the following demand management studies:[39]

- A study in Jamshedpur, India determined that two major industrial consumers of water could save as much as 25 percent of total industrial consumption, without affecting output or employment, by investing in new technologies and processes. This would release water supplies sufficient for nearly 50 percent of the entire unserved population of Jamshedpur. These actions could be stimulated through a combination of tariffs reflecting the economic cost of water, and soft loans/investment subsidies.
- A demand management study in Istanbul, Turkey, determined that a 5 percent reduction in unaccounted-for-water, combined with the reuse of 30 percent of domestic wastewater by the industrial sector could provide additional water supplies for one million people, representing 77 percent of those currently unserved.
- All 2.8 million residents of Mexico City without piped water supply could be served if traditional 16 litre water closets were replaced with seven litre low-flow toilets, and 20 percent of domestic wastewater were reused by the industrial sector.

3.2.3 Water Pricing and Tariff-Setting

Using data collected as part of the baseline data collection studies, the focus of these studies would be on determining appropriate rate structures for water and effluent in specific municipalities. The aim would be to balance economic efficiency and equity objectives, within a framework of promoting water conservation and wastewater reuse.

Tariff setting studies would consider the impact of rates intended to recover the costs for operation & maintenance and capital investment, as well as rates based on opportunity cost pricing.

3.2.4 Water Markets

Water allocation for rural irrigation typically accounts for 80 percent of total water resources use in developing countries. Achieving small efficiency gains of 5 percent in this sector could double the supply of water available for urban households, since this sector generally accounts for no more than 5 percent of total water resource use. Reflecting this link between competing water sectors, the proposed Urban Water Management Program would support studies analyzing the transfer of water from rural irrigation to urban household and industrial uses.[40] These studies would focus on determining the applicability of existing water market models based on the Californian and Chilean experiences to municipalities in Africa and South Asia. These studies would also identify informal

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[39] From Bhatia, Ramesh and Malin Falkenmark. "Water Resource Policies and Urban Poor: Innovative Approaches and Policy Imperatives," Water & Sanitation Currents. UNDP-World Bank Water & Sanitation Program. Washington: World Bank, 1993.

[40] Rather than imposing conservation measures, the establishment of water markets could create incentives for farmers to conserve water, and result in greater efficiencies in agricultural water use.

water markets existing in developing countries in order to determine their applicability to a formal setting.[41]

More specifically, the studies would assess and recommend appropriate legal frameworks, property and water rights, institutional and regulatory mechanisms, and necessary infrastructure.

3.2.5 Institutional and Management Options

This area of research supports the recognition that many, if not most, failures of water supply and sanitation projects can be traced back to institutional and management deficiencies. Research on institutional management options would explore more appropriate, integrated and innovative institutional arrangements and management procedures. This would include studying the feasibility and impact of increasing the level of involvement of players other than the public sector in service delivery. The options being considered would also consider mechanisms for improving public sector efficiency. Special attention would also be paid to better understanding and developing relations between the formal and informal water delivery sectors.

Particular attention would be paid to applying case-studies and best practices to the unique situations of individual municipalities.

3.3 Proposed program strategy

3.3.1 Focus on smaller cities and towns

Projects would be supported in countries characterized by rapid urbanization, and high incidence of poverty, and considered priorities by IDRC. In Sub-Saharan Africa, these include Tanzania, Kenya, Ghana, Mozambique, Angola, and South Africa. In South Asia, these include Pakistan, India, Nepal, Sri Lanka, and Bangladesh. In Southeast Asia, these include Cambodia and Vietnam.

In addition to this country focus, projects would be limited to secondary cities and towns undergoing rapid urban development, rather than mega-cities. This is as a result of the lack of attention paid to secondary cities, and an attempt to increase the likelihood of achieving meaningful project impacts.

3.3.2 Long-term relationships

The program would be built around long-term relationships with willing and interested municipalities and relevant water and sanitation authorities. This reflects the critical importance of maintaining continuity in research activities in order to maximize impacts, and build up funding from other

[41] Jaipur workshop participants identified extensive informal ground water trading in India associated with private ownership of groundwater in that country. They also pointed to the limitations of this form of trading, including overwithdrawal of groundwater, and the absence of similar markets in publicly owned surface water.

agencies.[42] As a result, overall program objectives would be achievable only in the long term (eight to twelve years). However, a UWM program would be based on the incremental development of a series of integrated studies. Each stage of studies, lasting from two to three years, would be used to continuously modify the long term objectives of the program.

3.3.3 Partnerships

Individual projects would be built on a foundation of meaningful and equal partnerships between researchers, utilities, and other public, formal and informal private, and community organizations and NGOs involved in the water sector. The success of the program will depend on the active participation of a full range of urban water stakeholders in project design, implementation and evaluation. In this sense, the program's "reach" would not be separated from its active participants. Those benefiting from the program (as well as those harmed) would be directly involved in its development and execution.

3.3.4 Client-oriented research

Rather than relying solely on researchers, research objectives and outputs would be defined largely by "end-users" of research. These include utilities, local authorities, formal and informal private sector interests, NGOs, and CBOs. This intention reflects the belief that end-users are best positioned to determine research priorities, and is consistent with a demand-based approach to urban water management programming. Using this strategy, the primary role of the researcher would be to design and execute research projects to achieve results defined by "the client". IDRC's role would be to mediate the competing interests of different end-users, and ensure that the voices of less powerful interests are heard.

3.3.5 Revenue Diversification

In addition to satisfying co-funding and parallel funding objectives, collaboration with donor agencies in program development would be actively and openly sought for the following reasons:

- Avoiding duplication and contradiction in development projects
- Integrating an IDRC-led research component into a broader development program, including specific projects of other agencies.
- Combining IDRC expertise with complementary expertise of collaborating agencies in a single more diverse program

Donor participation in program development would be limited to those agencies whose objectives and approach to development assistance are consistent with those of IDRC. In addition, partnerships between IDRC and contributing donor agencies would be reasonably balanced and equal. More flexibility and compromise would be considered when collaboration with donor agencies is limited to particular projects.

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[42] The 1995 evaluation of urban water projects found that projects preceded by earlier phases were far more likely to result in significant and positive impacts.

3.3.6 Results-based programming

In order to achieve measurable impacts, the program would require meaningful measures of performance. Specific measures of performance would be included as a component of project design, and would be designed by program participants. The following is a list of sample indicators:

- Lower water & sanitation costs and reduced incidence of water & sanitation-related health problems for urban and peri-urban poor
- Improvements to existing municipal water policies or decisions on basis of research findings
- Partnerships through meaningful modes of communication between researchers and water stakeholders, between communities and water & sanitation providers
- Improved access to sustainable funding by domestic researchers and research institutes
- Strengthened capacity and performance of water and sanitation service providers
- Strengthened capacity and performance of government/donor agencies measured in terms of the number of projects with demand management/ conservation components

3.4 Supporting integrated water management (IWRM) research

Water will be the key natural resources development constraint in the 21st century. Increasingly, water management stakeholders and donor agencies are recognizing that water should not be treated sectorally, but in an integrated approach. In this sense, a recommended long term goal is for the IDRC to support IWRM research.

The Exploration found that supporting the kinds of research studies associated with urban water management would equip IDRC with the skills necessary to pursue research in the broader area of Integrated Water Resources Management. The conceptual skills and project experience gained at the level of UWM are particularly relevant because of the emphasis on institutional, policy and technical integration, which is at the core of the IWRM agenda.

IDRC's current involvement in a range of integrated water management activities is summarized in Table 9. It is instructive to what extent IDRC has developed some expertise in virtually each IWRM activity. At present, the types of research being supported are drawn from the agricultural sciences, health sciences, engineering, economics, management sciences, and information sciences. Regional activities include Latin America, Eastern Europe, Southeast Asia, South Asia, East Africa, Southern Africa, and the Middle East.

The Exploration recommends the creation of a "virtual" IWRM program at IDRC. In principle, this would involve co-ordinating and focusing the broad range of water-related research activities currently being supported by IDRC. Co-ordination may involve the development of a formal water management research strategy, and appointment of a Senior Co-ordinator. A related output could be an IDRC Integrated Water Resources Management Project Experience Document to showcase IDRC's extensive experience in virtually all aspects of water management.

A coordinated approach to water resources management research would serve several purposes:

- In some cases, IDRC could undertake high profile, higher impact activities within a given country by working in virtually all aspects of IWRM. This would involve conducting research in several water subsectors at a household, local, regional and national level. The following is a sample illustrating the wide range of water sub-sectors currently being addressed by IDRC projects. These could all feed into national level water management policies.[43]

    - Household water security, supply, treatment and monitoring approach (Latin America)
    - PLAW PI Traditional water management (Sub-Saharan Africa)
    - Urban water demand management
    - National level tariff studies (Eritrea)
    - Economic instruments for pollution control (India)
    - Urban wastewater reuse (Vietnam)

- In those more frequent cases where IDRC chooses specific entry points to contribute to overall IWRM, parallel water research results could be synergized. For example, in Subsaharan Africa, there is no question that PLAW's demand management research in rural areas, carried out in parallel with urban demand management research, would result in more coherent and logical policy recommendations for the region as a whole.

Other benefits of a IWRM approach:

- ◊ Facilitate communication between program officers in Ottawa and in regional offices
- ◊ Provide a broader focal point for networking between IDRC-funded researchers involved in the water sector
- ◊ Provide greater leverage for seeking co- and parallel- funding from donor agencies
- ◊ Create opportunities for greater synergies in water-related research results

[43] In the weeks following the Exploration's Jaipur workshop, Mr. O.P. Kohli, Member of Parliament contacted IDRC's New Delhi office. His insistent requests for more information from IDRC on water managment solutions that had been described in a newspaper article covering the workshop led to the Exploration's Leader being contacted at a hotel in Pakistan, where he was on OT. The fact that a small-scale, low-profile workshop could create this reaction is indicative of the intense need for solutions to water management problems, the opportunity available for influencing national-level water policy, and IDRC's perceived leadership in this area.

TABLE 9 CURRENT IDRC INVOLVEMENT IN IWRM PROGRAM ACTIVITIES[44]

➜	Formulation of costed and targeted national action plans and investment programs	
➜	Integration of measures for protection and conservation of potential sources of freshwater supply	x
➜	Development of interactive databases, forecasting models, economic planning models and methods for water management and planning	x
➜	Optimization of water resource allocation under physical & socioec. constraints	
➜	Implementation of allocation decisions through demand management, pricing mechanisms and regulatory measures	x
➜	Flood and drought management	x
➜	Promotion of schemes for rational water use through public awareness raising, levying of water tariffs, and other economic instruments	x
➜	Mobilization of water resources, especially in arid and semi-arid areas	x
➜	Promotion of international scientific research cooperation on freshwater resources	
➜	Development of new and alternative sources of water supply: desalinization, artificial groundwater recharge, wastewater reuse, water recycling	x
➜	Integration of water quantity and quality management	x
➜	Promotion of water conservation, including development of water saving devices	x
➜	Support to water-users groups to optimize local water resources management	x
➜	Development of public participatory techniques and their implementation	x
➜	Strengthening of cooperation at local, national, regional and global levels	
➜	Dissemination of information and promotion of education for water users	x

[44] From Agenda 21, Chapter 18.

3.5 Proposed activities

The activities to be undertaken in the PI's first year are outlined below. A separate document in Annex 5 describes a more detailed proposal for PI activities, leading to a prospectus.

- ➜ Urban Water Demand Management Study in Jodhpur, Rajasthan.
- ➜ Development of an Development of a baseline data collection and management study for the Municipality of Tanga, Tanzania.
- ➜ Follow-up meetings with key donor agencies.
- ➜ Hosting a meeting of other interested donors.
- ➜ Contribution to the Global Water Partnership meeting in Montevideo (November, 1997).
- ➜ IDRC Urban Water Management Website design and maintenance.
- ➜ Publication of article or series of articles in Ecodecision.
- ➜ Preparation and presentation of papers at relevant workshops/conferences.
- ➜ Workshop in Latin America, to establish links between UWM Program and Environmental Management Secretariat.
- ➜ Presentation at CIDA, in order to expose CIDA staff to basic principles and approaches of Urban Water Management.

International Development Research Centre
in association with the Institute of Development Studies

Workshop

WATER MANAGEMENT IN URBANIZING REGIONS: The Link Between Operations, Policy and Research

Holiday Inn, Jaipur
Rajasthan, India
January 7-9, 1997

Since 1970, Canada's International Development Research Centre (IDRC) has been committed to supporting applied research and strengthening indigenous research capacity in developing countries. IDRC's dedication to improving people's lives through research and the application of knowledge is reflected in its mission of *Empowerment Through Knowledge*.

From January 7-9, 1997, the IDRC will be hosting a workshop on the theme of water management in urbanizing regions: The link between operations, policy and research. The purpose of the three-day event is to define the relationship between the research needs of decision makers and service providers in the municipal water sector, and the capacity of research institutes to respond to these needs. To this end, the workshop will serve as a forum to facilitate and promote dialogue between the producers and end-users of knowledge-based research products and services relevant to the water sector in urbanizing regions.

The workshop will bring together approximately 30 representatives of research institutes, municipal governments, water authorities, grassroots organizations and donor agencies. Workshop participants will be drawn primarily from South Asia and East and Southern Africa, but North America, Latin America, and Europe will also be represented.

The workshop will focus on the links between operations, policy and applied research related to the management of water and wastewater services in small and medium-sized municipalities. In particular, the workshop will address three broad development themes:

Institutional Arrangements for Service Delivery: privatization, contracting; satisfying the needs of rapidly growing informal and peri-urban settlements

Managing Demand for Urban Water: Water Pricing and Conservation strategies

Water , Sanitation and Health: Assessing the economic costs of health and environmental impacts, Surface and Groundwater Pollution, links between water quantity and quality.

rkshop is intended to result in the following outputs:

1. identification of the types of knowledge-based research products and services required by municipal policy makers, water authorities, and grassroots organizations in order to better manage the water sector;
2. a clear understanding of weaknesses in the capacity of indigenous research institutes to deliver these research products and services;
3. a strengthened water management network of end-users and producers of knowledge-based research products and services;
4. proceedings of the workshop.

The workshop format is intended to promote the active participation of all workshop participants through the use of short presentations, small discussion groups, and facilitated plenary sessions.

*The workshop will be conducted in English. All papers should be in English as well.

WORKSHOP FORMAT

INTRODUCTORY REMARKS

An overview of the IDRC's interest in urban water management research; An overview of workshop objectives, desired results and structure.

KEY NOTE ADDRESS

An overview of the international water management agenda, the impact of urbanization on water management, and the current state and possible roles of applied research in contributing to the sustainable management of the water sector in urbanizing regions.

OVERVIEW PRESENTATIONS

Two presentations providing a broad overview of the challenges and necessary responses required for the sustainable management of urban water and wastewater services.

DEVELOPMENT THEMES

Three development themes relevant to the municipal water sector will be explored:

Theme 1: Institutional Arrangements for Service Delivery
- models of political and financial decentralization for municipal government
- alternative models of service delivery: privatization, contracting out
- satisfying the needs of rapidly growing informal and peri-urban settlements

Theme 2: Managing Demand for Urban Water
- Water Pricing and Conservation strategies

Theme 3: Urban Water, Sanitation and Health
- Assessing the economic costs of health and environmental impacts
- Surface and Groundwater Pollution
- links between water quantity and quality: wastewater and solid waste

Each of these three themes will be addressed by means of two 15 minute presentations, 90 minutes devoted to small discussion groups, and a 45 minute plenary session.

Presentations

Two presentations on each of the three development themes will be made by developing country researchers. Each presentation will describe specific research-based solutions to water management challenges facing municipal water authorities, municipal governments and grassroots organizations.

Discussion groups
Following each set of two presentations, participants will form small discussion groups composed of no more than eight people. Each group will include a cross-section of researchers, policy makers, service providers, grassroots organizations and development agencies. Each discussion group will also include a facilitator and group leader selected from amongst workshop participants. Within the context of each development theme, discussion groups will address two issues:

- The research needs of end-users
- The capacity of research institutes to satisfy these needs

Thematic plenary sessions
Group discussion will be followed by a moderated thematic plenary session. During the plenary session, designated group leaders will present summaries of the issues raised by their respective discussion groups. Workshop participants will then be able to react to these issues.

CONCLUDING PLENARY SESSION
With the assistance of a facilitator, a concluding plenary session will be designed to achieve the following:

- Synthesize the lessons learned during the course of the workshop
- Prioritize the research needs of end-users
- Identify possible steps to be taken following the workshop

WORKSHOP SCHEDULE

Monday, January 6
Arrival of participants to Holiday Inn Jaipur*

evening: Reception

evening: Registration

Tuesday, January 7

8:30-10:00am: Registration

8:30-9:30am: Meeting of discussion group facilitators

10:00-10:40am: Introductory Remarks

10:40-11:00am: Tea Break

11:00-12:00pm: Introductory Presentations

Donatus Ishengoma-Ministry of Water, Tanzania

Takawira Mubvami-University of Zimbabwe, Zimbabwe

12:00-1:00pm: Lunch

Theme 1 Institutional Arrangements for Service Delivery

1:00-1:45pm: Thematic Presentations

Amparo Nunez-EMOS S.A., Chile

Fred M. Maunge-Water Utilities Corporation, Botswana

1:45-3:15pm: Discussion Groups

3:15-3:45pm: Tea Break

3:45-4:30pm: Plenary Session

Wednesday, January 8

Theme 2: Managing Demand for Urban Water

8:30-9:15am: Thematic Presentations

Paul Appasamy-Madras Institute of Development Studies, India

James van der Linde-Greater Hermanus Municipality, South Africa

9:15-10:45am: Discussion Groups

10:45-11:15am: Tea Break

11:15-12:00pm: Plenary Session

12:00-1:00pm: Lunch

Luncheon Presentation

Myron Lahola-IDRC, Ukraine

Theme 3: Urban water, sanitation and health

1:00-1:45pm: Thematic Presentations

Zubeeda Banu Quraishy-University of Madras, India

Joyce Ndesamburo- Sustainable Dar es Salaam Project, Tanzania

1:45-3:15pm: Discussion Groups

3:15-3:45pm: Tea Break

3:45-4:30pm: Plenary Session

Thursday, January 9

8:30-10:30am: Concluding Plenary Session

10:30-10:50am: Tea Break

10:50-12:00pm:	Concluding Plenary Session
12:00-1:00pm:	Lunch
1:00-3:00pm:	Optional sight-seeing event
evening:	Departure of participants

* All participants will stay at the Jaipur Holiday Inn, the venue for the workshop. IDRC will cover the cost of all travel and accommodations for participants of non-donor agencies from Africa, Asia, and Latin America. There is no registration fee for the workshop.

LIST OF PARTICIPANTS

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6 January - 9 January 1997
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ANNEX 5

International Development Research Centre

Draft Proposal for an Interim Program on Urban Water Management

The Urban Water Management Exploration

Programs Branch
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March 25, 1997

1.0 INTRODUCTION

This brief outlines a proposal for work under an approved Urban Water Management PI.

The Exploration assessed the feasibility of urban water research at IDRC and recommended the preliminary nature and structure of a PI. However, the nature of the Program Initiative must be further refined. As such, approval of the Program Initiative with only limited financial support for an interim one-year period is proposed. The overall goal of the work conducted over the year is to develop the PI so that it is a coherent initiative with logical purpose, rationale, methodology, outputs, reach, impact--i.e. to develop the prospectus.

Two major activities are proposed which will support the program and prospectus development:

- project development
- other PI development activities

These activities, as well as team building, duration, and budget are described below.

2.0 PROJECT DEVELOPMENT

2.1 Purpose

The main purpose of project development is to establish a critical mass of activities through the development of two new research projects to join several active IDRC projects. Immediate project development is recommended to "learn while doing" rather than waiting until all the theoretical PI underpinnings are complete, for the following reasons:

- to take decisive advantage of concrete co-funding opportunities
- to present an approved program to funding partners to which they can respond
- to move discussions with researchers and funding partners from the general to the specific to enable PI members to focus more clearly on PI development

As indicated in the report, the Exploration identified several concrete co-funding opportunities with USAID, WB-UNDP and SIDA in India, and with OPEC. As well, longer term opportunities may exist with inter alia, the ADB and CIDA.

Finally, the timing is ideal for the IDRC to present an approved program to the GWP, which acts to prioritize research areas and recommend these to donor agencies. Following-up with the momentum already created with the GWP may lead donor agencies to consider IDRC a leader in the new area of urban water research, similar to IDRC's reputation in urban agriculture.

2.2 Activities

The following activities are envisaged:

Development of two specific projects for funding during the interim year of the PI
Two specific projects are envisaged, both on demand management, one each in Africa and India. Each is based upon specific co-funding opportunities. The project descriptions attached are only preliminary ideas and will evolve as the projects are developed.

Development of other projects
Besides the two projects noted above, other potential projects have already been identified in Quetta, Pakistan (with ADB), India (UNDP-WB), Tanzania (Sustainable Cities Program), Palestine (SIDA), and Mozambique, and Ghana. These ideas will be further explored for potential funding in subsequent years.

2.3 Proposed Projects

Study 1: Urban Water Demand Management in Jodphur, Rajasthan

This study is inspired by a similar one conducted by the Office for Central and Eastern Europe, in Zaporizhzhia, Ukraine. IDRC Ukraine office staff and recipients travelled to the Jaipur workshop where this idea was envisaged. It is considered an excellent opportunity for second-third world collaboration as well as building bridges and synergy between two different IDRC initiatives. Outputs of the Zaporizhzhia project include a rational water tariff structure for the utility and the granting of a European Bank infrastructure loan.

Duration: 2 years

Revenue Diversification:
City of Edmonton (donated residential water meters)
USAID's India office (up to US $50,000)
Sida (incorporating a demand management component into its Urban Water Program)

Participating Organizations:
Institute for Development Studies in Jaipur
Jodhpur municipal water authority
Zaporizhzhia Vodokanal municipal staff

Objectives:
The overall goal would be identify the data required to design a coherent demand management program, and to collect the data. This would be only the initial study in a series aiming at improving service delivery to the urban and peri-urban poor.

Methodology:

- Assess the water and wastewater problem in Jodhpur
- Identify the data required for better analysis (see report, for type of data)
- Collect the data
  assess whether the donated meters are appropriate to the infrastructure in Jodhpur
  if appropriate, train utility staff and install residential water meters
- Make recommendations for the next study (demand management)

Impact/anticipated results:

- Improved understanding of the water sector
- Working partnership between municipal water authority, researchers, and non-public sector stakeholders.
- Increased visibility for the urban and peri-urban poor in decision making
- Better data for demand management analysis
- Trained municipal staff in installation and operation of water meters
- Promoted usage of municipal water meters
- Developed links between Ukrainian and Indian researchers and end-users

Study 2: Baseline Data Collection and Management Study for the Municipality of Tanga, Tanzania

Duration: 2 years

Revenue Diversification:
Organization of Petroleum Exporting Countries (OPEC) Development Fund
The project might also be of interest to the UNCHS/UNEP Sustainable Cities Program, and UNDP LIFE Programme.
The project could also be linked to the World Bank-funded Water Utility Program (WUP).

Potential Participating Organizations:
CEEST
University of Nairobi
National Urban Water Authority
Tanga municipal water authority
Relevant Community organizations and NGOs

Objectives:
The overall goal would be identify the data required to design a coherent demand management program, and to collect the data. This would be only the initial study in a series aiming at improving service delivery to the urban and peri-urban poor.

Methodology

- Assess the water and wastewater problem in Tanga
- Identify the data required for better analysis (see report, for type of data)
- Collect the data
- Make recommendations for the next study (demand management)

Impact/anticipated results:

- Improved understanding of the water sector
- Working partnership between municipal water authority, researchers, and non-public sector stakeholders.
- Increased visibility for the urban and peri-urban poor in decision making
- Better data for demand management analysis

3.0 OTHER PI DEVELOPMENT ACTIVITIES

Several other activities useful to strengthen the PI development and prospectus were identified during the exploration. They are discussed in the following sections:

3.1 PI Team Building

At the outset of the Exploration, all POs with a historical involvement in water research activities were invited to serve as core or resource members. Understandably, at the time the Exploration was approved, March 1996, the Centre had only recently completed its restructuring process and staff were energetically devoted to dealing with the backlog of existing monotoring requirements and beginning development of projects under the new structure. Despite these constraints, several POs contributed to the Exploration as resource members.

There was also an understandable reluctance to contribute to commit to an activity which might not go forward. But the work identified in the previous section and below cannot and should not be carried by the sole PO who led the exploration. So the first activity will be to expand the PI core-membership to develop the PI collectively.

Activities will include:

- attendance of the demand management workshop in Cairo
- dissemination and review of the final exploration report by potential core-members
- joint development of immediate and pipeline projects
- PI meeting to identify plan for developing prospectus

It is not expected that the time-commitment for project development will be onerous, particularly since only two projects are envisaged for funding in the first year. POs such as Hartmut

Krugmann are already exploring ideas to fit in the proposed Urban Water Management PI. In addition, it is unnecessary for the PI Team to be terribly large, especially during the first year.

However the time required to carry-out some of additional activities recommended to support program development will require allocation of RSA funds for consultants and summer-students to assist POs. These activities are listed below:

3.2 Publication and Dissemination

An important aspect of the interim program will be to advertise IDRC's involvement in urban water activities to an international audience through a web site, publication of IDRC water management activities, and participation in international conferences and workshops.

Workshop Proceedings. The Jaipur Workshop proceedings will be published and disseminated.

Website. A Website will be developed to provide a focal-point IDRC Urban Water Management activities.

Eco Decision Journal. IDRC was recently contacted by the editor of *Eco Decision* who offered to devote an entire edition of an upcoming journal to urban water management and invited IDRC to sponsor the edition and serve as a guest coeditor. Showcasing an IDRC program in part of or in an entire journal would be a dramatic way to announce IDRC's arrival on the urban water management stage to our research partners, NGOs, funding partners and other stakeholders.

Conferences and Workshops. Preparing papers and participating in selected upcoming International Conferences and Workshops on urban water would further aid program development.

Latin America Workshop: A specific initiative discussed during the Exploration is to organize a short workshop in Latin America, in conjunction with the Latin American Environmental Management Secretariat. This activity would serve to link IDRC program officers involved in water management activities.

3.3 CIDA Seminars

Particular attention will be paid to pursuing collaboration with CIDA. As mentioned in the report, CIDA has recently commenced planning how to incorporate urban development into its programming and will be developing a water strategy this year. The Senior Water Specialist and Urban Development Specialist have asked IDRC to submit a formal description of a future approved Urban Water Management Program and specific proposals to which they can respond. In addition they have invited IDRC to undertake the following activities:

UWM Seminar for CIDA staff: Conduct a seminar on new approaches to managing urban water to CIDA programming staff. The seminar will be coordinated by CIDA's Urban Development and Senior Water Specialist.

UWM Canadian Collaboration Seminar: Based on preliminary discussions held during the Exploration with Guy Carrier, CIDA, and Brock Carlton, Deputy Director FCM International Office, a joint CIDA-IDRC-FCM sponsored seminar is proposed, intended to bring together Canadians with experience in demand management and other initiatives.

3.4 GWP Meeting

An additional activity falling under the heading of revenue diversification will involve preparations for the Global Water Partnership Technical Advisory Committee meetings in Montevideo (November, 1997). If appropriate, this activity will include participation in the November meeting.

3.5 Donor Collaboration Meeting

If and when appropriate, a donor collaboration meeting could be held, as complementary to one-to-one meetings with donor agencies.

4.0 DURATION

The development and initiation of the two projects and the prospectus are expected to be complete by fiscal year-end. (March 30, 1998)

5.0 BUDGET

New Projects

Metering and Demand Management in India		$150,000 plus cofunding
Baseline data collection in Tanzania		$150,000 plus cofunding
	Subtotal	**$300,000**

Other activities	**Expenses**
Workshop Proceedings[1]	$ 0
Website	$ 3,000
Eco Decision Journal Publication[2]	$ 25,000
Conferences/workshops	$ 1,000
Latin America Workshop	$ 10,000 (Co-funded with EMS)
CIDA Seminar	CIDA-funded
FCM, IDRC, CIDA Seminar	$ 5,000 (Co-funded with CIDA, FCM)
GWP Montevideo Meeting	$ 1,000
Donor Collaboration Meeting	$ 10,000 (Co-funded)
Subtotal	**$ 55,000**

RSAs for consultants and summer student fees	**$ 45,000**
Total Budget Requested	**$ 400, 000**

[1]The Urban Water Exploration Budget contains sufficient budget to publish the Workshop Proceedings.

[2]In effect, IDRC would sponsor the publication of the Urban Water Management edition of the journal.